

MONTHLY JOURNAL OF  
THE MUSHROOM GROWERS'  
ASSOCIATION

# MGA BULLETIN

MARCH, 1956

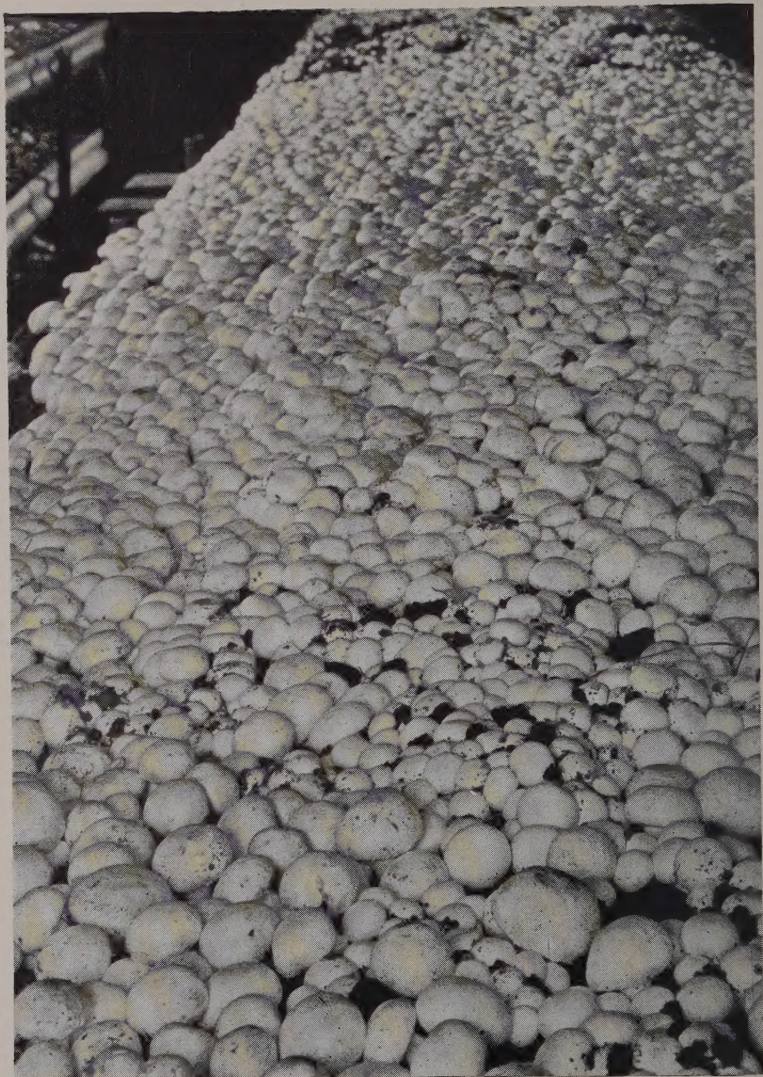
NUMBER 75

## CONTENTS

	Page
Editorial : Here and There ... ..	75
RESEARCH IN EASTERN GERMANY : Dr. W. Arnold ... ..	76
Stanley Middlebrook's Pinheads ... ..	79
I have been thinking : Dr. R. L. Edwards ... ..	83
For Your Diary ... ..	86
Stems and Pieces : Jos. Michaels ... ..	87
Thinking about having a new Boiler? ... ..	89
Seen This?—New Composter ... ..	90
Executive Committee Meeting ... ..	91
Caves of Agaric on Television ... ..	92
MGA HOLD PRESS CONFERENCE ... ..	92



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**EDITORIAL**

**HERE—AND THERE !**

This year should see the erection of a mushroom research unit at Littlehampton which we hope will be as good as or better than any in the world. The MGA Research Sub-Committee—comprising Raymond Thompson (trays), Arthur Hovell (glasshouses), H. H. Glasscock (mycology), B. D. Moreton (entomology) and myself (shelves)—is at this moment negotiating to this end with the Board of Management at Littlehampton and the Ministry of Agriculture in London, and at a later date we shall publish a full report in this Bulletin.

This report will be a modest one, in which our hopes will lie in the quality of the work projected at Littlehampton rather than the quantity. In the meantime startling news has reached us from the other side of the Iron Curtain.

As its Director of Research explains in this issue, an East German Institute for Mushroom Research and Scientific Experiments has been established at Dieskau, with a staff of more than 30, an area for trials of 35,000 sq. ft., and provision for expansion.

This programme has been “sponsored and generously financed” by the East German Government on the very sound grounds that the mushroom, containing protein and vitamins of the B group, is a valuable and important vegetable.

We know that our own Ministry at last recognises the mushroom as a food, but the national research now contemplated bears no relation to the economic importance of our crop—second to the tomato among the many crops in the Littlehampton programme—or to its high vitamin content.

The actual economic status of our crop is dependent upon the acceptance of a once-a-year form-filling irritation which is under consideration.

The actual nutritional value of our crop demands immediate analyses of a calibre sufficiently authoritative to be acceptable to the Ministry of Agriculture. The cost of such analyses is well within the financial capabilities of our Publicity Sub-Committee, and should be considered as a matter of urgency—in the view of your Research Sub-Committee, at any rate, which must have information like this if it is to secure for the Mushroom Industry a larger slice of the research cake.

FRED. C. ATKINS.

Dr. W. ARNOLD, *Director, Dieskau Mushroom Institute, describes*

## **RESEARCH IN EASTERN GERMANY**

**Staff of 30 with Area of 35,000 sq. ft.**

Mushroom growing in Eastern Germany has been an important industry for many years. Stimulated by the publications of Wilhelm Witt, of Torgau, a grower of international repute, many farms sprang up and produced excellent crops. The Second World War destroyed much that had been achieved, but a great deal of reconstruction has been undertaken in the past ten years, incorporating many improvements.

**It is due to the fact that mushrooms are a valuable vegetable containing protein and B vitamins that our Government has widely promoted and supported this work of reconstruction.** Mushrooms are now grown far more extensively than ever before, and the area is continually increasing because present production is not nearly sufficient to meet the demand.

They are produced in glasshouses, cellars, sheds, mines and caves of any description when special buildings are not available. Besides numerous small growers, many estates have adopted mushroom growing on a commercial scale which has proved the more profitable because there are ample quantities of horse-manure and compost is comparatively inexpensive.



GROWING IN GLASSHOUSES . . .

The industry here is particularly fortunate in that it has the support of a Government anxious to help both the grower and the grower-to-be. **An Institute for Mushroom Research and Scientific Experimentation has been established at Dieskau-Zwintschona, near Halle-Saale, sponsored and generously financed by Government grants.** It forms part of the Agricultural Department of Martin Luther University at Halle-Wittenburg.

It may be of interest to growers in Britain and wherever else the *MGA Bulletin* is read to give some details of this Institute. Dieskau is, so to speak, the cardinal point of our entire mushroom industry. Any grower may apply to us here for advice.

Founded only three years ago, the Station has already a **staff of more than 30** working on both the scientific and practical problems of the cultivated mushroom. **Growing area of 35,000 sq. ft. in 20 specially adapted cellars** is at our disposal for research and experimentation, and **further additional premises** of various kinds are available for commercial-scale trials. Heating is by different systems: Electricity, steam boilers, hot water and locomobile. **Modern well-equipped laboratories** afford facilities for intensive research.

Among the major problems we are tackling at present is the differentiation of varieties. There are too many growers who still grow varieties which long since have degenerated and are scarcely economic. We are trying a number of varieties which, though closely related, demand individual treatment and behave differently in different environments.



AND IN CAVES . . .

We have succeeded in obtaining "standard varieties," broadly corresponding to an "ideal" type, differing in form and colour as well as in their requirements. The selection is being related to flavour and vitamin-content. Further, we are developing varieties specifically suited to glasshouses and mines where the temperature is far higher than usual. Resistance to

disease is also being carefully studied, and we are growing varieties immune to the usual attacks, with the result that we rarely have a serious disease at the Institute.

We try to improve spawn by continuous experiments with spore germination and structure regeneration in our laboratories. **We use tobacco almost exclusively as the medium.** Our own cultivated tobacco is proving most efficient, whereas the ribs of imported tobacco are quite unsuitable.

We appreciate that mechanisation and motorisation is progressive and will make horse-manure scarce, and we are preparing to meet this scarcity by experimenting with compost substitutes. It has been found that composts with animal supplements are suitable for mushroom growing. The obvious desirability of utilizing those supplements which are likely to be plentiful has led us to pig manure. When mixed with sufficient fibrous matter, not necessarily straw, a marked and spontaneous fermentation results, and more frequent turnings are essential. We have found **pig manure, composted with road-sweepings and carefully treated, to be a substratum of first quality.**

Composts made entirely on a vegetable base have also been very good. All kinds of refuse—flax, sawdust, residues from the drug industry, etc.—were examined and some found to be promising. It is usually very important, of course, to regulate the fermenting temperature both as to level and duration, according to the physical structure of the substratum.

At the moment we have 22 different substrata on trial on a large scale; only a few of them contain animal droppings.

We no longer employ the term "synthetic compost" which is frequently met with in the literature, for composts on a true synthetic base, viz., artificial fibre, have not proved satisfactory, while **peat, alone or as an addition, may well be used.** Nutritious solutions applied as fertilizers have favourably influenced the development of mycelium and subsequent fructification.





ONE OF DIESKAU'S 20 EXPERIMENTAL CELLARS

The Halle University Research Institute is very young, and as yet has published little scientific literature. Instead, we are training growers by special lectures and courses with the object of having enough well-qualified people for the proposed extension and popularisation of mushroom growing. We are studying Fred. Atkins's *Mushroom Growing To-day* with special interest.

In the meantime we are anxious to establish contact with mushroom centres abroad for the exchange of experiences. Any visitor to our field of activity will find a hearty welcome, and we shall be pleased to have our work looked at critically. We invite MGA members to pay a visit to our Institute at Dieskau.

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### **ABOUT FLUSHES**

Edwards refers in his "I have been thinking" pages in February to my observation in another journal that I doubted "if any mushroom grower would regard research into the flush phenomenon as of more than academic interest." He admits I may have "correctly" described growers' views but thinks I am "wrong." He cannot have it both ways. If it is a correct assumption that the cause of flushing would come very far down the list of growers' problems (if it appeared at all), then I am not wrong in saying so. I do not mind being used as a peg upon which to hang a little scientific clout, but I did not expect our former Director of Research ever to accuse me of "taking a very short term view." Had my MRA colleagues and I taken a shorter view than we did in 1945 the Yaxley Station might have retained the industry's support. And none should know this better than Edwards.

FRED. C. ATKINS.

## PINHEADS

61. I have a salesman who can produce the most wonderfully diverse reasons for either giving me a very poor price or for not wanting any mushrooms at all. Markets are glutted; mushrooms are too big or too small; the housewife only wants lettuce and strawberries in summer and won't bother to go shopping in winter; she's on holiday in summer and doesn't want mushrooms and hasn't any money for them in winter because she's saving for the holiday; there would be a big demand to-day, but roads are icy and traffic can't get into the markets; the roads are clear but there's such a rush of traffic to get to the markets that all roads are blocked and only one or two buyers can get near the stand; you sent too many yesterday and we still have some left over; they arrived too late for the market; yesterday's was a good market but yours were damaged in transit; and so on. There was one day recently, however . . . . . "The price is good; we'll guarantee 6/- a lb. The demand is terrific." I'll swear he knew we hadn't any that day.

62. I am rather puzzled by the behaviour of composts during this frosty weather. They seem to build up the necessary heat but instead of turning to a dark chocolate colour they remain a sickly olive-green throughout. Is it that chemical action takes place at the expense of bacterial activity? Is it *vice versa*? Is it . . . . . but if I've any clue at all why should I shoot my mouth? I wait for science to provide the clue, and to predict the sort of crops we might expect from these green composts? Please, gentlemen, don't wait for me to give the results. Be bold, be brave, be devils and have a go!

63. Growers in "dark houses" may like to know of a non-Actinic glass which permits light to pass through but greatly reduces heat transmission. Our south end windows are normally shuttered during cropping but for the past nine months one house has had this glass in the sunny end and it has not been necessary at any time to close the shutters. We have found no drying of the beds and no discolouring of the mushrooms even where sunlight has played directly on the beds. The glass, greenish in tint, is known as "Calorex," and is roughly three times as costly as ordinary horticultural glass of equal thickness. It is obtainable (with too much delay, I'm afraid) through local glass merchants, and technical details may be obtained from Pilkington Brothers Ltd., St. Helens, Lancs. I think it's worth the extra, south side only, to have pretty thoroughly daylighted houses. We are using it in our new houses.

64. An article by W. Dyke was recently submitted to the Editorial Board and was rejected\* by two members on scientific grounds. The

\*The idea was not rejected. The article in its original form was rejected because (a) the "science" was not in accordance with scientific fact, (b) there were personal innuendos which we thought offensive, and (c) adoption of the procedure seemed to us to be fraught with danger. So we decided that I should re-draft the article, retaining in Dyke's words all the practical details he gave, but omitting asides which in no way affected his proposition. Dyke would not accept this. If members as a whole would prefer irresponsibility in its Editorial Board, both Edwards and I would be happy to resign.—F.C.A. Now now boys!—Ed.

other two members wanted it published in our Bulletin because they thought that though and because the matter was revolutionary growers had a right to know about it. However, there was no fifth member of the Board to give a casting vote and the two pro-publication members gracefully stood (or were forced?) down. Instead of the MGA getting the article it went into the Lea Valley Growers' Association "News Letter" in January. Obviously I was one of the pro-publication members and you can do your own guessing about the rest. Reasons given for rejection were that the matter was unscientific, unreliable, and almost certainly unpractical if not impossible to use. The Bulletin has from time to time been full of such so-called madcap ideas—I've even described them that way myself; indeed I may have produced some!—but in everyday conversation among mushroom growers one is constantly meeting the maddest suggestions. Some turn out to be extremely valuable. (I note with some interest that Dr. Edwards uses the same line of thought in the third paragraph of his February Article). Undoubtedly Dyke's article was revolutionary. Briefly the idea was to steam sterilize compost after the first turn and when it was cool to put it straight into the beds. He claimed it was possible to increase production by up to 100%. Now many questions can be asked; the idea could be and indeed has been ridiculed. Nevertheless I have heard that even while our Board was rejecting the article at least one grower was setting about a pretty large scale test. There were probably others. I have subsequently learned that this grower has had a crop which compared not unfavourably with normal composts. That's not a 100% improvement, but it's not as disastrous as wisecracks predicted. Many of to-day's commonplaces were once wrongly labelled as cranky ideas. Was our Board right in trying to decide what is and what is not good for the grower? I expect there will be wholesale resignations after this has been read, or I may be politely told that my services as Pinhead writer are no longer required. Neither contingency would worry me too much!

65. We have recently learned—why it's been kept from us I don't know!—that Emulsified Cresylic Acid breaks down when frozen into its component parts of emulsifier and acid. This may mean that in certain circumstances one is using only diluted emulsifier for spraying and dipping boards, trays, etc., presumably with no better results than could be obtained with neat water! In other circumstances—as one gets to the bottom of the drum—one might be using neat C.A., mixing badly with water because unemulsified, giving . . . . . well, what results? It might be that a Saponified Cresylic Acid would be safer to use in winter, as it does not, I believe, "break down."

66. Clyde Higgs, in his feature in the *Countryman* records a visit to a mushroom factory at Yaxley where "the beds take three weeks to prepare, with heavy loam as a base and a covering of synthetic compost . . . . ." If this is the secret of Ben Noble's success it has been very well kept. But I take it unkindly of their technical director, Fred. C. Atkins, for and from whom we've all "stood" so much, that he has permitted his pen to omit the fact.



67. Go back to Pinhead 39 (January). Have you, Scientists, found the answer? You want some results first? Here they are. The UNLIMED *machine-turned* peat trays finished up at 1.61, and the UNLIMED *hand-turned* did 0.61. I leave you to sort that out. I can't. Will you help? It may be of interest that in the same multi-replicate test, LIMED *machine-turned* trays did 1.76 and LIMED *hand-turned* 1.85.

68. Our new houses are being heated by hot water pipes (through steam calorifier) with auxiliary 1" flow and return steam pipes for peak heating, spawn running, etc. During the recent cold spell we tested the steam lines and with 17° of frost outside these two simple 1" lines heated *empty* houses to over 80°. We are now wondering what the 4" hot water pipes are doing there!

69. I can support Edwards' article on flushing in the February Bulletin. Our flushing intervals vary from 7 in summer to 12 in winter. I must congratulate him on "successfully delaying a flush for five days to avoid the Christmas week-end." The operative word is "successfully." The last time I did this—for the same reason—I had no further mushrooms from that house, with or without flushes. That was many years ago and I learned my lesson. I suggest Doc. Edwards was not "successful" but lucky.

70. Words should be more carefully chosen on occasion. Exception could be taken to Atkins' article (February) "Diagnosis of Mummy." And someone should speak to the enthusiast who plans to wind up the Paris Conference with "Vive La France." And what of this (from *Lancet*) "The Brighton Happy Feet Week is being held in the Corn Exchange.":

71. We knew the crisis was approaching, relentlessly, remorselessly, silently: we felt it in our bones. But we were not to know the day or hour of its manifestation, nor the full measure of our deliverance. When the moment arrived it was one of intense, unbelievable relief. Unlike many such moments it was not fleeting, but promised then, as it promises still, to be permanent; imparting to life a new meaning, a new happiness; giving each new day a glowing ray of long-forgotten hope. Winter passes into perpetual Spring. A frail barque (to continue the metaphors) now sails mercifully out of the raging waters of doubt and despair into the peaceful harbour of knowledge and security. The torn, wracked brain, having bordered on insanity too long, yields contentedly if belatedly to the soothing charms of common sense, and lies first weakened, then convalescent, and a brief moment later healed. The follies of intemperance—wild, dashing, excusably optimistic in their day—are transformed in a twinkling to the sobriety of matured experience. Even as a lost memory may be regained by sudden shock, so instantly have the scales fallen from dim tired eyes to reveal the delight and brilliance of open day. Night has passed. We have emerged from a long, dread, dark, dismal, unhealthy, unhappy tunnel into glorious joyous sunshine. The prison gates open; many birds sing; we are FREE again. In short, we have at last thrown trays out of our system.



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I have been thinking . . . . .

## **ABOUT SPAWN**

By R. L. EDWARDS

I want to start by saying that I think, and have said for years, that the general standard of quality of our spawns is excellent.

At one time it used to be customary, whenever a mushroom crop failed, to blame the spawn, but the days when that was justified have long passed. In recent years we have had the further luxury of a wide choice of spawns, among several strains growing on grain, or on pelleted, granulated or cake manure. (I am only discussing pure white spawns.) It is this choice which presents some of the grower's problems, because to a considerable extent he has to make it in the dark.

In the early post-war years when I first became a spawn user at the Mushroom Research Station there were two English Manufacturers of spawn, Darlington and Mount, and one Scottish, Pinkerton.

It was the practice of some growers to use two or all three of these regularly, one house one spawn, and we used all three strains of white spawn, without finding any appreciable difference in yield or quality of the mushrooms produced. For example, I know one farm where Darlington's white and Mount white spawns were used in alternate houses over a series of over 100 crops with no appreciable difference in average yield.

Then grain spawn appeared, offered first in this country by Pinkerton, and three new suppliers arrived in the market, Sinden, Sobexas and R. C. Darlington. Sobexas offered several strains of white mushrooms, on manure, pellets, or grain, and the original three manufacturers added grain spawn to their ranges.

Obviously competition was becoming keener, and growers had a whale of a time comparing spawns. Their conclusions were not always the same on different farms, nor even in successive tests or in small scale tests compared with whole house trials.

I am not sure how long it took for some general conclusions to emerge, but they did in time, and I think by 1954 many, if not most growers who have tried a variety of spawns, would have agreed that grain spawns are capable of giving higher yields in the same cropping period, or equal yields in a shorter time than the established manure spawns. I also think, but do not expect such general agreement about this, that grain spawns are more sensitive to growing conditions and management, and their yields are more easily depressed by maltreatment than are those of manure spawns.

In about the last two years there seems to have been another development, particularly in the grain spawns (or some of them). The quicker cropping has been accentuated, but it seems to some growers to be at the expense of total yield in, say ten weeks cropping, which appears to have fallen. Also there seems to have been an increase, and perhaps



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a startling one, in the number and variety of abnormal forms of growth:  
tall spindly stalks with tiny caps;  
thick hard rimmed mushrooms, the veil disappearing when the mushroom opens;  
thick stems with a tiny, thin, flat cap;  
pale or white under-developed gills;  
etc.

Some growers are becoming increasingly concerned at these tendencies, and are anxiously wondering where they will lead.

It is always difficult to satisfy oneself, if one is critical-minded, that an unusual phenomenon such as a new form of growth or disease really is new, and has not merely been overlooked before. A further difficulty is that there are changes in methods of growing such as the adoption of various forms of peat casing, which may help to cause such changes in growth. Nevertheless it does seem that there are some real changes in the character of at least some of the spawns in use during the last five years.

As an example of the effect on production I may quote the experience of Noble Mushrooms, who have given me access to many of their records during the last ten years. For one whole year 1949, they averaged 3 lb. per sq. ft. on 60 crops grown in 24 houses, filling each house  $2\frac{1}{2}$  times a year. Their production was  $7\frac{1}{2}$  lb. per sq. ft. per year. They then made various changes, adding a shelf and reducing the thickness of the beds, which were expected to, and did, decrease their yield per sq. ft. but increased their output per house. After a period of adjustment, in 1954 they again produced  $7\frac{1}{2}$  lb. per sq. ft. per year, from three crops in each house, with an average yield of  $2\frac{1}{2}$  lb. per sq. ft. More recently without further apparent changes in method they have found this average yield falling, but at the same time their first lb. per sq. ft. has been produced in a shorter average time than ever before. Their experience is not by any means unique, as other growers who keep careful records are finding the same sort of thing, and it is a serious matter when they have to fill each house  $3\frac{1}{2}$  times a year instead of  $2\frac{1}{2}$  times to obtain the same annual output.

Now what is the cause of these developments? And particularly can we "put the clock back" by using one of the "old style" spawns which took three weeks or more to produce its first pound but could give  $2\frac{1}{2}$  to 3 lb. in 10 weeks picking? Are any of them still the same?

We all appreciate any manufacturer's desire to keep his trade secrets, but it seems to me that there are some questions we can quite legitimately ask them. We are not told whether or how often it is necessary to renew the parent cultures of a particular strain of spawn from a mushroom instead of by the simpler laboratory process of tissue culture in incubators. From the consistent behaviour of the spawn in the early post-war years it would appear, either that this is not often necessary or that it can be done repeatedly without changing the characteristics of the strain. If this is so, the changes which seem to have occurred in some spawns and the differences between various strains are the result of deliberate action by the manufacturer, and I think we can reasonably ask them to tell us when they change their strain. If they consider this

an unreasonable request perhaps they will say so and give their reasons. It would be a satisfactory answer if the new strain were better, but only if this was true under all conditions in which it might reasonably be used.

Another point is that the quicker cropping and tendency to give abnormal forms of growth both seem to be more prevalent with grain spawn, though they are not confined exclusively to this type. One spawn manufacturer has told me that his strain is the same whether grown on manure or grain, and another has said that he found it best to use a different strain for his grain spawn. It has been said quite reasonably that the mushroom culture determines the characteristics, and the grain or manure is merely a vehicle for its introduction into the bed; once it is growing in the compost the vehicle should have no further influence. Do the spawn makers agree with this view? The subsequent behaviour of some micro-organisms, e.g., virulence of some pathogenic bacteria and ability to use some kinds of food material, can be altered by growing them on certain media.

Grain spawn under ideal conditions seems to grow into the compost faster than does manure spawn, which could account for the more rapid cropping, or this might be a characteristic of the strain. Grain spawn also seems more sensitive to imperfect conditions in the compost and I am inclined to attribute the increase in abnormal forms of growth whether on grain or manure spawn, to greater sensitivity to unfavourable conditions or management during the cropping stage, or possibly greater susceptibility to disease.

Do the spawn makers agree, and if so is this due to the strain, or the grain, or both? One leading authority expressed the opinion several years ago, when "hard gill" was rare, that it was inherent in the strain but that it was possible to breed it out. It is now more common than it was then!

So please, Spawn Makers, we agree that you are doing a fine job and turning out a high quality product, but will you tell us a bit more about it, answer some of the queries posed here, and particularly tell us when you change it?

---

## **FOR YOUR DIARY**

### **COMING EVENTS**

Saturday, 14th April: Farm Walk, Cranleigh, Surrey, by kind permission of Messrs. John Ady & Co. Ltd.

Thursday, 14th June to 23rd June: International Conference, Paris.

Wednesday, 11th July: Farm Walk, Thakeham, Sussex, by kind permission of Messrs. A. G. Linfield Ltd.

Saturday, 22nd September: Farm Walk, Oxted, Surrey, by kind permission of Messrs. Broadham Produce Co., Ltd.

14th—15th November: Mushroom Industry Exhibition, Eastbourne.

Unless notified otherwise all Farm Walks will commence at 2.30 p.m. Members in Lancashire, Yorkshire and Cheshire will receive a special invitation to the Burscough Bridge Walk, but those outside this area who hope to attend should notify the Secretary.



From America comes . . .

## **STEMS AND PIECES**

*By Joseph M. Michaels, Naperville, Illinois*

1. I received an interesting letter from Dr. E. H. Lucas, Professor Drug Plant Research at Michigan. He writes that the paper on mushrooms and cancer will appear shortly in the journals, "Proceedings of the Society for Experimental Biology and Medicine." He tells that there is present in the cultivated mushroom a tumor inhibiting principle but that the amounts are not significant. I quote from his letter. He says, "Until we find a way of increasing the production of this principle this species (cultivated mushroom) does not seem to offer the possibilities that other species apparently have. We are not losing sight, however, of the potentialities of the commercial mushroom for the purposes of our work."

2. To make a good compost mushroom growers pay high prices for protein supplementation in the strawy manures and their synthetic composts made on a straw basis. Also there are some growers like myself who have found that if some of the straw in stable manure is replaced with hay the compost will be better. Researchers at Colorado A & M have harvested a 'super hay.' The first cutting of 'super hay' contained 20.5% crude protein, twice the usual yield of protein in ordinary meadow hay. In the second cutting the crude protein was down to 15.6%, but this was still high according to common standards. In Colorado this 'super hay' was fed as a protein supplement to over-wintering breeding cattle in the same way that most cattlemen feed cottonseed cake in wintering operations. In a controlled experiment heifers gained  $\frac{3}{4}$  lb. a day when fed 2 pounds of 20.5% protein hay. One lb. of 41% linseed cake in another group produced the same gain. So the A & M researchers found that 'super hay' could replace expensive protein supplementation in cattle feeding.

And what is 'super hay'? It is ordinary meadow hay that has been fertilized with 400 lb. of nitrogen to the acre.

Even the addition of ordinary hay (9% crude protein) is protein supplementation. The 'hay and cobs' synthetic compost makers know that. I do not suggest to discard all the wheat straw in manure, for straw gives us the hemi-celluloses and pectocelluloses which hydrolize to give sugars to feed the mushroom. It is even possible that hay without straw could supply even a more balanced diet.

So what? There is much wasted and useless space on most mushroom farms. An acre fertilized with 400 lb. of nitrogen will yield 3 tons (dry weight) of 'super hay.' That is a lot of protein. And hay looks nice in bloom bending under the paws of the wind. It has a charming quality about it not found in bags of brewer's grain stacked on the wharf. And what does a bag of 26% protein dried brewer's grain cost? It ain't hay.

3. I really did not feel quarrelsome with the spawn makers nor did I want to question their infallibility when I wrote in the diary that spawn was a likely disease vector. It evoked many interesting comments

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and a scathing letter from a spawn maker. But I like this man's spawn so well that I ordered another batch of it the day after his caustic letter. Dr. E. B. Lambert has made a comment in a letter which I think growers will find interesting. I quote from his letter: He writes, "You might be interested in learning that on a trip through Ohio, Indiana, Illinois, and Missouri about ten years ago I found what we now call yellow moulds in each of these states. I am not making spawn so I would prefer not to take a stand one way or another on the question of spreading diseases on pure culture spawn but of course the yellow moulds, for example, could have been spread around 30 years ago on brick spawn coming over from France or England since it was known to be in France at least 50 years ago."

"Along this line, I was very much interested and surprised at the rapid spread of the truffle disease about 1930. Within a two or three year period after we published our first paper on this disease, we had reports from Australia, and England, South Africa, etc. I was inclined at the time and still am, to believe that the fungus causing this disease became suddenly apparent and destructive along with the discovery that spawn ran faster at 75° and the practice of running spawn at this higher temperature rather than between 50° and 60° as was formerly the custom. This made conditions suddenly favourable for the appearance of the truffle fungus. It all seems rather simple now but believe me, it was puzzling at the time it was happening."

4. So trays are harder to spawn than shelves. I wonder what the die-hard shelf grower will say when liquid spawn becomes a reality. Suspended in a nutrient solution it can be sprayed into the narrowest spaces between trays—and into the wasted wide spaces between shelves. I know that there is at least one spawn maker working diligently in that direction. And how far will the others be behind?

---

### **THINKING ABOUT A NEW BOILER?**

Members who are thinking of installing new heating arrangements in connection with their farms will be interested to learn that loans, under the Ministry's fuel saving scheme, are available to mushroom growers.

One member who has obtained such a loan—it was for £600 in this particular case—states that once he satisfied the Ministry on the amount of fuel likely to be saved as a result of the proposed installations, and they were satisfied also with his previous year's trading accounts, his application was granted in full.

Members who wish to avail themselves of the facilities offered should, as the first step, obtain the necessary forms and particulars from their local fuel office. Plans of the proposed new installations with figures giving the estimated fuel saving per year should be prepared and sent with the application. These plans and figures should be drawn up by a competent engineer. Facilities for inspecting the farm accounts should also be provided.

Improved and adequate insulation, again designed to save fuel, also ranks for a loan.



## ***SEEN THIS ?***



### **NEW COMPOSTER**

A new type of complete composter, designed by an MGA member, Mr. A. Hawkins of Bungalow Farm, Haddenham, Cambs., and manufactured by Messrs. F. A. Standen & Sons Ltd., Stanpoint Works, St. Ives, Hunts., at their works at Lynn Road, Ely, is shortly to be placed on the market and the machine is to be demonstrated at Mr. Hawkins' farm on 20th, 21st and 22nd March. All MGA members will be welcome to the demonstration.

Mr. Hawkins, who has been growing mushrooms for the past three years, designed and made the first machine from which the manufactured prototype appeared. He has, in his own words, "tested it thoroughly for over a year and I am more than satisfied with its performance."

Known as the Standen-Hawkomatic Compost Mixer, the purpose of this machine is to fully mechanise the entire process of compost turning and mixing as required by mushroom growers and horticulturists.

Cost of the machine, which is to be fitted with a floor level small front elevator to ease the manual work, is in the £250—£300 range.

At the time of my visit only synthetic compost had been put through this composter, but stable manure is now being given a trial and the results will be available at the time of the demonstration.

The machine can be used throughout all the turns, mixing the water and the chemicals as required. The compost passes through a revolving drum the action of which fully breaks it up. Water is added by means of a fully controllable spray and the chemicals are bulk fed into a hopper the feed from which is adjustable over the range of from 3½ lb. to 40 lb. per cwt., if desired. The adhesion of the chemicals to the compost is aided by a fine spray of water. The mixture passes up an elevator at the top of which is a spinner mechanism which throws the compost on to a heap, thoroughly aerating it in the process. It is claimed that by using this machine a more uniform compost is obtained and there is less loss of heat in the turns, which keeps bacterial action working. The compost can be brought to the texture required a few days earlier than by hand turning.

The machine is mounted on wheels for easy moving and is under four feet in overall width. It is driven by a low powered electrical or petrol engine.

The makers claim that by using this machine one man can carry out the whole operation throughout the entire composting process much faster than a gang of men mixing and turning by hand. It has been proved that one man can turn, with the machine, 6½ tons of compost in 2½ hours.

Haddenham is a mile or two West of the Cambridge-Ely road. The demonstrations will start at 10.30 a.m. W.R.A.

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### **JANUARY MGA EXECUTIVE MEETING**

Presiding over the January meeting of the MGA Executive Committee Mr. G. W. Baker (MGA Chairman) stated that the reason why the 1956 Annual Exhibition had been fixed for November this year at Eastbourne was that the exhibition hall was not available prior to that date owing to other conference bookings. This not only applied to Eastbourne but to at least one other South Coast resort at which enquiries had been made. He said it appeared vitally important that a booking for 1957 should be made as soon as possible.

Outlining preliminary proposals for the 1956 conference and exhibition Mr. Baker said it was proposed to include two or more lectures in the programme as well as other attractions. It was also suggested that the MGA annual meeting should not, in future, be held in conjunction with the exhibition, etc., but should be held, probably in March and in London. On the evening of the first day of the exhibition and conference it was proposed to hold a dinner followed, possibly, by a properly organised dance, etc. This would increase the social attraction of the event and would also enable the trade to join in.

Mr. Reed reported on the publicity position and outlined preliminary plans for the coming year. Mr. Harding outlined the progress so far made on the matter of marketing mushroom compost. A loss of £107 was reported on the 1955 Brighton Exhibition due, it was reported, to an expenditure of £50 on the hall, plus £32 for miniature competition cups and £20 on flowers, all of which had not arisen at the 1954 event.

There was a full attendance of committee members with the exception of Mr. F. L. Filmer, who was unwell, and Mr. Campbell Melville, who was unable to make the journey from Scotland.

## **THE CAVES OF AGARIC LTD. ON TELEVISION**

The mushroom growing caves of Messrs. Agaric Ltd., of Bradford-on-Avon, Wilts., of which Mr. A. G. Pointing, member of the MGA Executive Committee, is Managing Director, performed a very useful piece of publicity work for the mushroom industry in general when they permitted their mushroom growing project to be featured on the B.B.C.'s television programme late in January.

The feature occurred in the programme "Westward Ho" and the commentary, both interesting and humorous, was carried out by Johnny Morris, a well-known television personality.

Lasting for ten minutes to a quarter of an hour, the programme naturally concentrated on the extensive limestone caves in which Messrs. Agaric grow mushrooms on ridge beds.

The filming included a most effective animated drawing of spawn running in the compost and the commentator made observations on the technical aspects of the work, including the making of compost, pasteurisation, casing and so on. "Emperor Nero called mushrooms 'Food of the Gods,'" said Johnny Morris who, inside the caves with the carbide lamps of the pickers spreading an eerie glow over the beds, said "Here they are, glowing soft suede white in the dark, a complacent tubby huddle of little bald gentlemen listening to the echos of the caves." The film and commentary ended with the commentator displaying a large plate of cooked mushrooms.

The full commentary was recorded and, at the January meeting of the Executive Committee members were able to listen to it. Mr. Pointing was congratulated. W.R.A.

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## **MGA HOLD PRESS CONFERENCE**

Headed by Mr. G. W. Baker (Chairman) the MGA held a Press Conference in Fleet Street, London, on Monday, 20th February, when details of the MGA's Publicity Campaign were given to representatives of the Trade Press and other publications. Mr. Baker said it gave the Association particular pleasure to be able to report that 85% of the Grower Members of the Association and 60% of the Eire Grower Members had agreed to support the fund by contributing 2d. for publicity on each carton of spawn purchased.

Additional subscribers to the scheme (the first list was published last month) are:—

Allen, R. I., Imokilly Orchards, Eire  
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Smail, G. S., Eire  
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Sheldrake, Miss Dorothy M., Suffolk  
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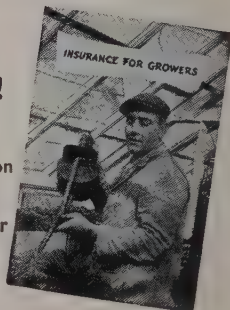
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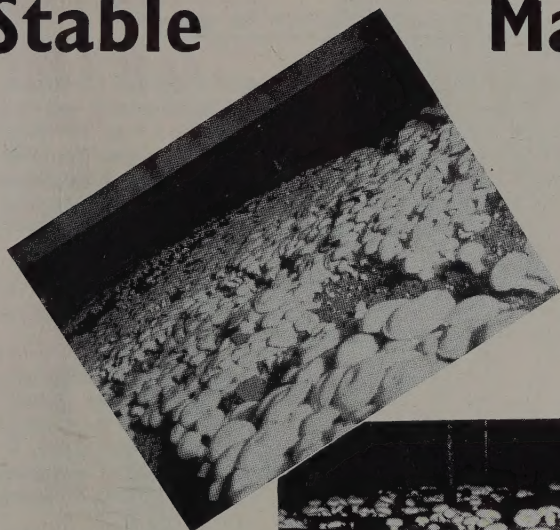
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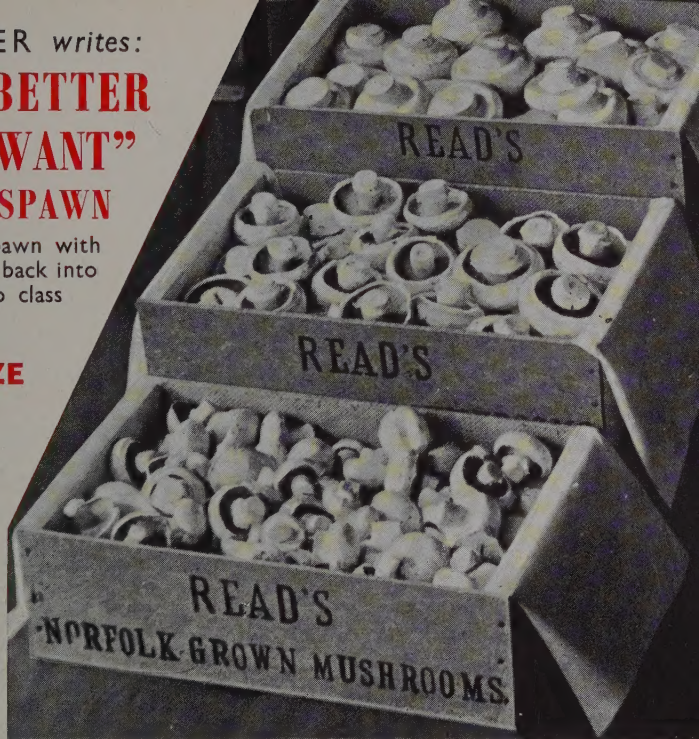
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